

Appln No. 09/308,607

Amdt date February 17, 2004

Reply to Office action of October 14, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for producing porous spherically-shaped bio-ceramics comprising dropping a starting material for ceramics into a low temperature medium from a thin tube having an inner diameter ranging from about 0.3 to 2 mm, followed by freeze drying in the medium and then sintering the same, wherein the starting material is obtained by adding, to a calcium phosphate in the form of a powder having a size of not more than 100  $\mu\text{m}$ , a 3 to 15% by weight aqueous solution of a binder in an amount of 2 to 4 times the weight of the powder.

2. (Previously Presented) A process for producing porous spherically-shaped bio-ceramics as claimed in claim 1, wherein the calcium phosphate is hydroxyapatite, tricalcium phosphate, calcium dihydrogenphosphate, tetracalcium phosphate, octacalcium phosphate, or a mixture thereof.

3. (Previously Presented) A sustained drug release product obtained by forming the porous spherical-shape bio-ceramics obtained according to claim 1 or 2, wherein the pores are impregnated with a drug.

4. (Previously Presented) A sustained drug release product as claimed in claim 3, wherein, after the drug is

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impregnated into the porous bio-ceramics, the impregnated parts are plugged by said bio-ceramics, whereby the sustained release time of the drug is controlled.

5. (Currently Amended) A process for producing porous spherically-shaped bio-ceramics comprising:

bringing a starting material for bio-ceramics into contact with a low temperature medium by dropping the starting material into the low temperature medium from a thin tube having an inner diameter ranging from about 0.3 to 2 mm, wherein the starting material is obtained by adding, to a calcium phosphate in the form of a powder having a size of not more than 100  $\mu$ m, a 3 to 15% by weight aqueous solution of a binder in an amount of 2 to 4 times the weight of the powder, followed by freeze drying in the medium to form a freeze dried product and;

thereafter sintering the resultant freeze dried product.

6. to 10. (Cancelled)

6 ~~11~~. (Previously Presented) A process for producing porous spherically-shaped bio-ceramics as claimed in claim 5, wherein the calcium phosphate is hydroxyapatite, tricalcium phosphate, calcium dihydrogenphosphate, tetracalcium phosphate, octacalcium phosphate, or a mixture thereof.

7 ~~12~~. (Previously Presented) A process for producing a sustained drug release product comprising impregnating the pores

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of the porous spherical-shape bio-ceramics obtained according to claim 1 or 2 with a drug.

8 13. (Previously Presented) A process as claimed in claim 12, wherein, after the drug is impregnated into the porous bio-ceramics, the impregnated parts are plugged by said bio-ceramics, whereby the sustained release time of the drug is controlled.

9 14. (Previously Presented) A process as claimed in claim 1, wherein the binder slurry is an aqueous solution of one or more of a water-soluble cellulose derivative, polyvinyl alcohol, polyacrylic acid, polyacrylamide, polyvinyl pyrrolidone, polyethylene glycol, and starch.

15. (Cancelled)

10 16. (Previously Presented) A filler for regenerating body tissue comprising porous spherically-shaped bio-ceramics obtained by a process according to claim 1.

11 17. (Previously Presented) A method for regenerating body tissue comprising introducing into areas where body regeneration is desired porous spherically-shaped bio-ceramics obtained by a process according to claim 1.

12 18. (Previously Presented) A process for producing porous spherically-shaped bio-ceramics as claimed in claim 1, wherein

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the porous spherically-shaped bio-ceramics each have a diameter ranging from about 0.01 to about 10 mm.

- 13 19. (New) A process for producing a sustained drug release product according to claim 1 or 5 wherein the low temperature medium is liquid nitrogen.

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Amendments to the Specification

Please amend the specification by inserting the following replacement paragraphs.

Please replace the paragraph beginning at page 12, line 35 with the following replacement paragraph:

1 g of calcium phosphate powder (#400 mesh or less) having Ca/P = 1.48 synthesized by a known wet synthesis method was mixed into 3 g of a 10% by weight aqueous solution of polyvinyl alcohol, then 0.5 g of ion exchange water was added and the mixture further mixed and stirred. 10 ml of the slurry obtained was filled into a thermosyringe and a 24G needle (inner diameter 0.47 mm) was used to drop it into liquid nitrogen. The frozen product obtained was dried using a vacuum freeze dryer, then was sintered at 1400°C for 5 hours to obtain 0.9 g of spherical-shape ceramics. The spherical-shape frozen product ~~ceramics~~ obtained has a diameter of 0.8 to 1.2 mm. Powder X-ray measurement confirmed that the spherical-shape ceramics was a single phase of  $\alpha$ -tricalcium phosphate.

Please replace the paragraph beginning at page 14, line 25 with the following replacement paragraph:

1 g of calcium phosphate powder (#400 mesh or less) having Ca/P = 1.48 synthesized by a known wet synthesis method was mixed into 3 g of a 10% by weight aqueous solution of

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polyvinyl alcohol, then 0.5 g of ion exchange water was added and the mixture further mixed and stirred. 10 ml of the slurry obtained was filled into a thermosyringe and a 24G needle (inner diameter 0.47 mm) was used to drop it into liquid nitrogen. The frozen product obtained was dried using a vacuum freeze dryer, then was sintered at 1400°C for 5 hours to obtain 0.9 g of spherical-shape ceramics. The spherical-shape frozen product ~~ceramics~~ obtained has a diameter of 0.8 to 1.2 mm. (See Figs. 6(a) and 6(b).)